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| E2 | 1 | WESSELS JURINA MARGARETE/AU |
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| E4 | 2 | WESSELS K/AU |
| E5 | 6 | WESSELS K D/AU |
| E6 | 6 | WESSELS K E/AU |
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| E9 | 2 | WESSELS KAALEN M C/AU |
| E10 | 4 | WESSELS KAALEN M C A/AU |
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L1 29 ("WESSELS JURINA M"/AU OR "WESSELS JURINA MARGARETE"/AU)

=> dup rem l1

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L2 24 DUP REM L1 (5 DUPLICATES REMOVED)

=> d ibib abs l2 1-24

L2 ANSWER 1 OF 24 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 2004122811 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15012165
TITLE: Optical and electrical properties of three-dimensional
interlinked gold nanoparticle assemblies.
AUTHOR: **Wessels Jurina M**; Nothofer Heinz-Georg; Ford
William E; von Wrochem Florian; Scholz Frank; Vossmeier
Tobias; Schroedter Andrea; Weller Horst; Yasuda Akio
CORPORATE SOURCE: Sony International (Europe) GmbH, Materials Science
Laboratories, Hedelfingerstrasse 61, 70327 Stuttgart,
Germany.
SOURCE: Journal of the American Chemical Society, (2004 Mar 17) 126
(10) 3349-56.
Journal code: 7503056. ISSN: 0002-7863.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: NONMEDLINE; PUBMED-NOT-MEDLINE
ENTRY MONTH: 200405
ENTRY DATE: Entered STN: 20040312
Last Updated on STN: 20040526
Entered Medline: 20040525

AB The optical and electrical properties of 11-20 nm thick films composed of approximately 4 nm gold nanoparticles (Au-NPs) interlinked by six organic dithiol or bis-dithiocarbamate derivatives were compared to investigate how these properties depend on the core of the linker molecule (benzene or cyclohexane) and its metal-binding substituents (thiol or dithiocarbamate). Films prepared with the thiol-terminated linker molecules, (1,4-bis(mercaptomethyl)benzene, 1,4-bis(mercaptomethyl)cyclohexane, 1,4-bis(mercaptoacetamido)benzene, and 1,4-bis(mercaptoacetamido)cyclohexane), exhibit thermally activated charge transport. The activation energies lie between 59 and 71 meV. These films show distinct plasmon absorption bands with maxima between 554 and

589 nm. In contrast, the film prepared with 1,4-cyclohexane-bis(dithiocarbamate) has a significantly red-shifted plasmon band (approximately 626 nm) and a pronounced absorbance in the near infrared. The activation energy for charge transport is only 14 meV. These differences are explained in terms of the formation of a resonant state at the interface due to overlap of the molecular orbital and metal wave function, leading to an apparent increase in NP diameter. The film prepared with 1,4-phenylene-bis(dithiocarbamate) exhibits metallic properties, indicating the full extension of the electron wave function between interlinked NPs. In all cases, the replacement of the benzene ring with a cyclohexane ring in the center of the linker molecule leads to a 1 order of magnitude decrease in conductivity. A linear relationship is obtained when the logarithm of conductivity is plotted as a function of the number of nonconjugated bonds in the linker molecules. This suggests that nonresonant tunneling along the nonconjugated parts of the molecule governs the electron tunneling decay constant ($\beta(N)(-)(CON)$), while the contribution from the conjugated parts of the molecule is weak (corresponding to resonant tunneling). The obtained value for $\beta(N)(-)(CON)$ is approximately 1.0 (per non-conjugated bond) and independent of the nanoparticle-binding group. Hence, the molecules can be viewed as consisting of serial connections of electrically insulating (nonconjugated) and conductive (conjugated) parts.

L2 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:225285 CAPLUS
 TITLE: Urea-melt solubilization of carbon nanotubes
 AUTHOR(S): Ford, William E.; Roberts, Tony; Yasuda, Akio;
Wessels, Jurina M.
 CORPORATE SOURCE: Materials Science Laboratories, Sony International
 (Europe) GmbH, D-70327 Stuttgart, N/A, Germany
 SOURCE: Abstracts of Papers, 227th ACS National Meeting,
 Anaheim, CA, United States, March 28-April 1, 2004
 (2004), IEC-246. American Chemical Society:
 Washington, D. C.
 CODEN: 69FGKM
 DOCUMENT TYPE: Conference; Meeting Abstract
 LANGUAGE: English

AB We describe a quick and tech. simple process in which molten urea reacts with pre-purified single-walled carbon nanotubes (SWNTs) to make them highly soluble in water. Addition of aldehydes to the melt significantly improves the efficiency of the process. Isolation of the soluble SWNTs by extraction (water) and precipitation (sodium perchlorate) results in a fraction that is enriched in SWNTs relative to carbon onion and associated metal catalyst particles. Methods of characterization include optical and IR absorption spectroscopy and scanning and transmission electron microscopy.

L2 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:509004 CAPLUS
 DOCUMENT NUMBER: 139:203228
 TITLE: Self-Assembled Gold Nanoparticle/Alkanedithiol Films:
 Preparation, Electron Microscopy, XPS-Analysis, Charge
 Transport, and Vapor-Sensing Properties
 AUTHOR(S): Joseph, Yvonne; Besnard, Isabelle; Rosenberger,
 Miriam; Guse, Berit; Nothofer, Heinz-Georg;
Wessels, Jurina M.; Wild, Ute; Knop-Gericke,
 Axel; Su, Dangsheng; Schloegl, Robert; Yasuda, Akio;
 Vossmeier, Tobias
 CORPORATE SOURCE: Materials Science Laboratories, Sony International
 (Europe) GmbH, Stuttgart, D-70327, Germany
 SOURCE: Journal of Physical Chemistry B (2003), 107(30),
 7406-7413
 CODEN: JPCBFK; ISSN: 1520-6106

PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Gold nanoparticle/alkanedithiol films were prepared via layer-by-layer self-assembly. For the assembly process, dodecylamine-stabilized Au nanoparticles with an average size of 4 nm and alkanedithiols with different alkylene chain lengths (C6, C9, C12, C16) were used. The thickness of the films was determined by AFM and ranged between 26 and 34 nm. FE-SEM and TEM images indicate that the particle size within the film materials was similar to that of the dodecylamine-stabilized particles used for film preparation. The composition of the films was analyzed by XPS. The absence of the

nitrogen signal indicated that the dodecylamine ligands were quant. exchanged by alkanedithiol mols. during film assembly. Two sulfur signals were observed, which could be assigned to sulfur bound to gold (S-Au) and to free thiol groups (S-H). As indicated by the relative signal intensities, about 60% of the alkanedithiol mols. were bound with both ends to the nanoparticles, whereas 40% were bound with only one thiol group. The C/S ratio was in good agreement with the stoichiometry of the alkanedithiol mols. All films showed linear current-voltage characteristics. Conductivity measurements at variable temperature were consistent with an Arrhenius-type activation of charge transport. Using an activated tunneling model for describing the charge transport properties, we obtained an electron tunneling decay constant of $\beta N = 0.61$ or 0.71 , depending on the method used for data anal. When the films were dosed with vapors of toluene and tetrachloroethylene, the resistance of the films increased reversibly. This response increased exponentially with increasing length of the alkanedithiol mols. The chemical selectivity of the films corresponded essentially to the solubility properties of the alkanedithiol mols.

REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 4 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:482149 CAPLUS

DOCUMENT NUMBER: 139:171707

TITLE: Rectifying Behavior of Electrically Aligned ZnO Nanorods

AUTHOR(S): Harnack, Oliver; Pacholski, Claudia; Weller, Horst; Yasuda, Akio; Wessels, Jurina M.

CORPORATE SOURCE: Sony Corporate Laboratories Europe (SCLE), Materials Science Laboratories Sony International (Europe) GmbH, Stuttgart, 70327, Germany

SOURCE: Nano Letters (2003), 3(8), 1097-1101
CODEN: NALEFD; ISSN: 1530-6984

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors report on the elec. alignment of ZnO nanorods and their elec. properties. The ZnO nanorods were wet-chemical synthesized, and their length and diameter were adjusted to .apprx.200-300 nm and 15-30 nm, resp. The nanorods were deposited onto electrode structures and directed into 200- to 800-nm-wide electrode gaps by using alternating elec. fields at frequencies between 1 and 10 kHz and field strengths between 106 and 107 V/m. The nanorods align parallel to the elec. field lines and make elec. contact with the Au electrodes. Clear photoresponse to 366-nm UV light irradiation was demonstrated. The current-voltage characteristics of the aligned rods are strongly nonlinear and asym., showing rectifying, diode-like behavior and asymmetry factors up to 25 at 3-V bias voltage.

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:860347 CAPLUS

DOCUMENT NUMBER: 138:69412
TITLE: Biofunctionalization of silica-coated CdTe and gold nanocrystals
AUTHOR(S): Schroedter, Andrea; Weller, Horst; Eritja, Ramon; Ford, William E.; Wessels, Jurina M.
CORPORATE SOURCE: Institute of Physical Chemistry, University of Hamburg, Hamburg, 20146, Germany
SOURCE: Nano Letters (2002), 2(12), 1363-1367
CODEN: NALEFD; ISSN: 1530-6984
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This contribution reports the synthesis of water-soluble silica-coated CdTe nanocrystals that possess an ideally designed ligand shell with respect to colloidal properties and surface coupling reactions. We describe conjugation strategies for the modification of the fluorescent biocompatible nanocrystals with biomols. that provide a mol. recognition potential like the biotin/avidin couple and DNA.
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:582018 CAPLUS
DOCUMENT NUMBER: 137:259587
TITLE: Tris(hydroxymethyl)phosphine-capped gold particles templated by DNA as nanowire precursors
AUTHOR(S): Harnack, Oliver; Ford, William E.; Yasuda, Akio; Wessels, Jurina M.
CORPORATE SOURCE: Materials Science Laboratories, Sony International (Europe) GmbH, Advanced Technology Center Stuttgart, Stuttgart, D-70327, Germany
SOURCE: Nano Letters (2002), 2(9), 919-923
CODEN: NALEFD; ISSN: 1530-6984
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Tris(hydroxymethyl)phosphine-capped gold nanoparticles (.apprx.1-2 nm diameter) bind densely to DNA, although both species are neg. charged. The particles are also active catalysts for electroless plating of gold. Electroless plating after adsorption to calf thymus DNA immobilized on silicon provides nanowires as narrow as .apprx.30-40 nm and elec. conductivities .apprx.one-thousandth that of bulk gold. Here we summarize our phys. characterization of the particles and their DNA conjugates and initial elec. measurements after plating.
REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:920420 CAPLUS
DOCUMENT NUMBER: 136:159443
TITLE: Platinated DNA as precursors to templated chains of metal nanoparticles
AUTHOR(S): Ford, William E.; Harnack, Oliver; Yasuda, Akio; Wessels, Jurina M.
CORPORATE SOURCE: Materials Science Laboratories, Sony International (Europe) GmbH Advanced Technology Center Stuttgart, Stuttgart, D-70327, Germany
SOURCE: Advanced Materials (Weinheim, Germany) (2001), 13(23), 1793-1797
CODEN: ADVMEW; ISSN: 0935-9648
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The synthesis and characterization of colloidal Pt-DNA composites obtained by treating platinated DNA with borohydride ion are described. This process generates nm-sized nucleation sites along the DNA mol. for the electroless deposition of Au. Colloidal Pt/DNA composites containing nm-sized Pt particles with good long-term stability were obtained by the chemical reduction of platinated DNA. The Pt particles can be enlarged by treating the composites with an electroless plating solution when they are either immobilized on Si or dissolved in solution. Such materials may thus prove to be useful as precursors for DNA-based nanowires or nanoelectronic devices.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 8 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:782659 CAPLUS

DOCUMENT NUMBER: 132:233710

TITLE: In-vitro-studies on the formation of 5-aminolevulinic acid-induced protoporphyrin IX

AUTHOR(S): Fuchs, Claudia; Siegert, Johannes; Wessels, Jurina M.; Sauer-Nehls, S.; Kriegmair, M.; Baumgartner, R.

CORPORATE SOURCE: Ludwig-Maximilians-Universitat, Munich, Germany

SOURCE: Laser & Technology (1999), 9(1), 8-16

CODEN: LASTE2; ISSN: 1121-0656

PUBLISHER: Lasergrafica Polver s.r.l.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The uptake of 5-aminolevulinic acid (5-ALA) as well as the retention of 5-ALA-induced protoporphyrin IX is a particular interest of the clin. application of photodynamic tumor therapy. Studies with radiolabeled [4-14C] 5-ALA in fibrosarcoma cells of the mouse (SSKII) indicate that fetal calf serum (FCS) influences the uptake of 5-ALA itself. In the presence of FCS uptake of [4-14C] 5-ALA seemed to be lower than in FCS-free medium. Temperature dependent uptake studies on the formation of 5-ALA-induced protoporphyrin IX were performed using flow cytometry. Results exclude diffusion and indicate an active uptake of 5-ALA. Creatinine could be identified as the only one of the FCS components which is responsible for a reduced 5-ALA uptake. Flow cytometric studies indicate the influence of serum on release of 5-ALA-induced endogenous protoporphyrin IX. Albumin, one of the major protein constituents of FCS, was found to be partly responsible for the release of protoporphyrin IX.

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 9 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 1998:454906 BIOSIS

DOCUMENT NUMBER: PREV199800454906

TITLE: Investigation of lipid peroxidation in liposomes induced by heavy ion irradiation.

AUTHOR(S): Ziegler, Christine [Reprint author]; Wessels, Jurina M.

CORPORATE SOURCE: CPO-Cent. Protonther. Orsay, BP 65, F-91402 Orsay, France

SOURCE: Radiation and Environmental Biophysics, (July, 1998) Vol.

37, No. 2, pp. 95-100. print.

CODEN: REBPAT. ISSN: 0301-634X.

DOCUMENT TYPE: Article

LANGUAGE: English

ENTRY DATE: Entered STN: 21 Oct 1998

Last Updated on STN: 21 Oct 1998

AB Lipid peroxidation induced by heavy ion irradiation was investigated in 1,2-dilinoleoyl-sn-glycero-3-phosphocholine (DLPC) liposomes. Lipid peroxidation was induced using accelerated heavy ions that exhibit linear energy transfer (LET) values between 30 and 15 000 keV/mum and doses up to 100 kGy. With increasing LET, the formation of lipid peroxidation

products such as conjugated dienes, lipid hydroperoxides, and thiobarbituric acid-reactive substances decreased. When comparing differential absorption spectra and membrane fluidity following irradiation with heavy ions and x-rays (3 Gy/min), respectively, it is obvious that there are significant differences between the influences of densely and sparsely ionizing radiation on liposomal membranes. Indications for lipid fragmentation could be detected after heavy ion irradiation.

L2 ANSWER 10 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:558801 CAPLUS

DOCUMENT NUMBER: 127:197624

TITLE: Electron Injection by Photoexcited Ru(bpy)32+ into Colloidal SnO2: Analyses of the Recombination Kinetics Based on Electrochemical and Auger-Capture Models

AUTHOR(S): Ford, William E.; Wessels, Jurina M.;

Rodgers, Michael A. J.

CORPORATE SOURCE: Center for Photochemical Sciences, Bowling Green State University, Bowling Green, OH, 43403, USA

SOURCE: Journal of Physical Chemistry B (1997), 101(38), 7435-7442

CODEN: JPCBFK; ISSN: 1089-5647

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The photosensitization of colloidal particles of antimony-doped SnO2 by electrostatically adsorbed Ru(bpy)32+ (bpy = 2,2'-bipyridine) produced Ru(bpy)33+ and a conduction band electron (ecb-) with a quantum efficiency close to 1. The influence of the injected electron population d. on the dynamics of the subsequent recombination between Ru(bpy)33+ and ecb- was investigated by nanosecond laser flash photolysis. The initial average number

of

Ru(bpy)33+/ecb- pairs per particle (Ne) created by the laser pulse was varied in the range 0.03-7. The rate of recombination (krec) increased nonlinearly by a factor of 250 over this range in Ne. The nonlinear dependence of krec on Ne was analyzed quant. using two different models: (1) an electrochem. model based on the Butler-Volmer equation and (2) a model based on the Auger recombination mechanism. Both models gave satisfactory fits to the data with parameters that are phys. reasonable. The Butler-Volmer equation was used to relate the rate of recombination to the overpotential driving the reaction by making the assumption that the overpotential is linearly proportional to Ne. That anal. gave values of $(2.1 \pm 0.7) + 106 \text{ s}^{-1}$ for the intrinsic rate constant and 0.59 ± 0.11 for the transference number, with each excess electron contributing $22 \pm 6 \text{ mV}$ to the overpotential. In the Auger-capture model, it was assumed that an equilibrium exists between Ru(bpy)33+ and the stannic hydroxyl radical, $>\text{SnO}\bullet$, and that ecb- recombines with $>\text{SnO}\bullet$ and not directly with Ru(bpy)33+. The values of n_0 and $B_1 \exp(\Delta E^\circ/kBT)$ were found to be $(1.3 \pm 0.1) + 10^{19} \text{ cm}^{-3}$ and $(9 \pm 1) + 10^{-34} \text{ cm}^6\text{-s}^{-1}$, resp., where n_0 is the equilibrium concentration of free electrons, B_1 is the coefficient for the conduction

band-to-trap

Auger transition, and ΔE° is the difference in reduction potentials of Ru(bpy)33+ and $>\text{SnO}\bullet$. Comparison of these data to those for colloidal particles of undoped SnO2 showed that the doping of SnO2 with antimony does not significantly affect the dynamics of electron recapture by Ru(bpy)33+.

REFERENCE COUNT: 77 THERE ARE 77 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 11 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN DUPLICATE 2

ACCESSION NUMBER: 1997:105787 BIOSIS

DOCUMENT NUMBER: PREV199799404990
TITLE: Photooxidation of tryptophan: O-2(1-DELTA-g) versus electron-transfer pathway.
AUTHOR(S): Wessels, Jurina M. [Reprint author]; Foote, Christopher S.; Ford, William E.; Rodgers, Michael A. J.
CORPORATE SOURCE: GSF-Res. Cent. Health Environ., Ingolstaedter Landstr. 1, 85764 Oberschleissheim, Germany
SOURCE: Photochemistry and Photobiology, (1997) Vol. 65, No. 1, pp. 96-102.
CODEN: PHCBAP. ISSN: 0031-8655.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 10 Mar 1997
Last Updated on STN: 10 Mar 1997

AB Tris (2,2'-bipyridyl)ruthenium(II)chloride hexahydrate (Ru(bpy)-3-2+) free in solution and adsorbed onto antimony-doped SnO-2 colloidal particles was used as a photosensitizer for a comparison of the O-2(1-DELTA-g) and electron-transfer-mediated photooxidation of tryptophan (TRP), respectively. Quenching of excited Ru(bpy)-3-2+ by O-2(3-SIGMA-g-) in an aerated aqueous solution leads only to the formation of O-2(1-DELTA-g) (ϕ -DELTA = 0.18) and this compound was used as a type II photosensitizer. Excitation of Ru(bpy)-3-2+ adsorbed onto Sb/SnO-2 results in a fast injection of an electron into the conduction band of the semiconductor and accordingly to the formation of Ru(bPY)-3-2+ and was used for the sensitization of the electron-transfer-mediated photooxidation. The Ru(bpy)-3-3+ is reduced by TRP with a bimolecular rate constant $k_Q = 5.9 \times 10^{-8} \text{ M}^{-1} \text{ s}^{-1}$, while O-2(1-DELTA-g) is quenched by TRP with $k_t = 7.1 \times 10^{-7} \text{ M}^{-1} \text{ s}^{-1}$ (chemical + physical quenching). Relative rate constants for the photooxidation of TRP (k_c) via both pathways were determined using fluorescence emission spectroscopy. With N-p, the rate of photons absorbed, being constant for both pathways we obtained $k_c = (372/N-p) \text{ M}^{-1} \text{ s}^{-1}$ for the O-2(1-delta-g) pathway and $k_c \text{ gtoreq } (25 \text{ 013}/N-p) \text{ M}^{-1} \text{ s}^{-1}$ for the electron-transfer pathway, respectively. Thus the photooxidation of Trp is more than two orders of magnitude more efficient when it is initiated by electron transfer than when initiated by O-2(1-DELTA-g).

L2 ANSWER 12 OF 24 CAPLUS. COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:363532 CAPLUS
DOCUMENT NUMBER: 125:99767
TITLE: Time-Resolved Luminescence Investigation of the Adsorption of Ru(bpy)32+ onto Antimony-Doped SnO2 Colloidal Particles
AUTHOR(S): Ford, William E.; Wessels, Jurina M.; Rodgers, Michael A. J.
CORPORATE SOURCE: Center for Photochemical Sciences, Bowling Green State University, Bowling Green, OH, 43403, USA
SOURCE: Langmuir (1996), 12(14), 3449-3453
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The adsorption of Ru(bpy)32+ (bpy = 2,2'-bipyridine) onto neg. charged antimony-doped SnO2 colloidal particles (ca. 4-nm diameter) was monitored by time-resolved luminescence. Electron injection from photoexcited Ru(bpy)32+ into the conduction band of the semiconductor particle results in luminescence quenching predominantly within the laser pulse when the complex is bound to the particle, whereas the luminescence of the unbound complex decays with a lifetime of several hundred nanoseconds. The relative concns. of the bound and free species are thus readily obtained by determining the relative contributions of the quenched and unquenched components in the luminescence decay curve. Binding of Ru(bpy)32+ to the particles conforms to the Frumkin adsorption isotherm and suggests that

the adsorbed Ru(bpy)₃²⁺ mols. self-associate with a free energy of interaction equal to -1.9 ± 0.7 kcal mol⁻¹. The average maximal capacity of each particle for adsorbed Ru(bpy)₃²⁺ determined by the binding data, 29 ± 10 , is in agreement with the value obtained by ion exchange, 30 ± 4 , but is smaller than predicted for a close-packed monolayer.

L2 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:931713 CAPLUS

DOCUMENT NUMBER: 123:324846

TITLE: Effect of Solvent Polarizability on the Forbidden $1\Delta_g \rightarrow 3\Sigma_g^-$ Transition in Molecular Oxygen: A Fourier Transform Near-Infrared Luminescence Study

AUTHOR(S): Wessels, Jurina M.; Rodgers, Michael A. J.

CORPORATE SOURCE: Center for Photochemical Sciences, Bowling Green State University, Bowling Green, OH, 43403, USA

SOURCE: Journal of Physical Chemistry (1995), 99(49), 17586-92
CODEN: JPCHAX; ISSN: 0022-3654

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Solvent-induced shifts of the forbidden $0-0\ 1\Delta_g \rightarrow 3\Sigma_g^-$ transition energy in mol. O were studied in 50 solvents and 2 solvent mixts. using an interferometer-based emission spectrometer. In 44 out of 50 solvents, a linear relation between solvent polarizability and peak position was found. Linear regression of these data extrapolates to 7916.7 cm⁻¹, which is in agreement with the electronic transition energy (7918.1 cm⁻¹). The dispersion forces are primarily responsible for the solvent-induced changes of the $02\ 1\Delta_g \rightarrow 3\Sigma_g^-$ transition energy. In 6 solvents, viz. H₂O, MeCN, MeOH, acetone, dioxane, and THF, the transition energy was lower than expected from solvent polarizability. Expressions which take both macroscopic solvent parameters, viz. dielec. constant (ϵ) and the refractive index (n), into account were not able to rationalize the observed deviations; this conclusion was further supported by studies of solvent mixts. A general correlation between transition energy and radiative rate constant data from the literature $k_r = a \exp(-\Delta E/\gamma)$, where a and γ are consts. and ΔE is the $02\ 1\Delta_g \rightarrow 3\Sigma_g^-$ transition energy, was observed. From the fit the authors obtained for γ a value of 18 cm⁻¹. This value is within the order of magnitude of London dispersion interactions, i.e., the driving force for the perturbation-induced intensity enhancement of the forbidden $02\ 1\Delta_g \rightarrow 3\Sigma_g^-$ transition.

L2 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:847026 CAPLUS

DOCUMENT NUMBER: 123:301280

TITLE: Detection of the $02(1\Delta_g) \rightarrow 02(3\Sigma_g^-)$ Transition in Aqueous Environments: A Fourier-Transform Near-Infrared Luminescence Study

AUTHOR(S): Wessels, Jurina M.; Rodgers, Michael A. J.

CORPORATE SOURCE: Center for Photochemical Sciences, Bowling Green State University, Bowling Green, OH, 43403, USA

SOURCE: Journal of Physical Chemistry (1995), 99(43), 15725-7
CODEN: JPCHAX; ISSN: 0022-3654

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Fourier-transformed near-IR luminescence studies of the $02(1\Delta_g) \rightarrow 02(3\Sigma_g^-)$ transition in H₂O in the presence of various concns. of the singlet oxygen quencher sodium azide were performed. In neat H₂O (τ appr. 4 μ s) the signal-to-noise (S/N) ratio obtained was 236. In the presence of 10^{-2} M NaN₃, where the lifetime of $02(1\Delta_g)$ is reduced to approx. 180 ns, the $02(1\Delta_g)$

phosphorescence could still be detected with an acceptable S/N ratio of 8. From these measurements a bimol. rate constant of $(5.8 \pm 1.1) \times 10^8$ M⁻¹ s⁻¹ for NaN₃ was obtained.

L2 ANSWER 15 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on
STN DUPLICATE 3

ACCESSION NUMBER: 1995:257289 BIOSIS
DOCUMENT NUMBER: PREV199598271589
TITLE: Singlet oxygen luminescence spectra: A comparison of interferometer-and grating-based spectrometers.
AUTHOR(S): Wessels, Jurina M.; Charlesworth, Paul; Rodgers, Michael A. J. [Reprint author]
CORPORATE SOURCE: Cent. Photochemical Sciences, Bowling Green State University, Bowling Green, OH 43403, USA
SOURCE: Photochemistry and Photobiology, (1995) Vol. 61, No. 4, pp. 350-352.
CODEN: PHCBAP. ISSN: 0031-8655.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 13 Jun 1995
Last Updated on STN: 13 Jun 1995

AB The current trend in methodology for determining IR and near-IR absorption spectra is to employ interferometer-based instruments to replace the monochromator-based devices used heretofore. As a dispersion element, the interferometer offers major improvements in spectral resolution (Connes advantage), light throughput (Jacquinot advantage) and data acquisition through multiplexing (Felgett advantage). We have compared signal-to-noise (S/N) ratios of grating-based and interferometer-based instruments for making spectral determinations of near-IR luminescence. Our results show that under identical excitation and detector conditions the interferometer instrument easily outperforms the grating, giving a 10-fold improvement in S/N at high signal amplitude ($A_{488\text{nm}} = 0.97$) and a 20-fold improvement when the signal amplitude is low ($A_{488\text{nm}} = 0.06$). Although some spectral resolution is sacrificed when scan times on the Fourier transform (FT)IR are significantly shortened, the S/N ratio was found only to decrease by a factor of 2 for a 10-fold decrease in scan time. This adds to the advantages of the FTIR technique because the S/N will thus improve for the same total acquisition time.

L2 ANSWER 16 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on
STN DUPLICATE 4

ACCESSION NUMBER: 1995:174319 BIOSIS
DOCUMENT NUMBER: PREV199598188619
TITLE: Flow cytometric detection of micronuclei by combined staining of DNA and membranes.
AUTHOR(S): Wessels, Jurina M. [Reprint author]; Nuesse, Michael
CORPORATE SOURCE: GSF-Inst. Biophysikalische Strahlenforschung, Arbeitsgruppe Durchflussszytometrie, Neuherberg, Postfach 1129, D-85758 Oberschleissheim, Germany
SOURCE: Cytometry, (1995) Vol. 19, No. 3, pp. 201-208.
CODEN: CYTODQ. ISSN: 0196-4763.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Apr 1995
Last Updated on STN: 27 Apr 1995

AB A new staining method is presented for flow cytometric measurement of micronuclei (MN) in cell cultures and human lymphocytes using membrane-specific fluorescent dyes in addition to DNA staining. Several combinations of fluorescent membrane and DNA dyes were studied for a better discrimination of MN from debris in a suspension of nuclei and micronuclei. For staining of membranes, the lipophilic dyes 2-hydroxyethyl-7,12,17-tris(methoxyethyl)porphycene (HEPn) and

1,6-diphenyl-1,3,5-hexatriene (DPH) were used in combination with ethidium bromide (EB), proflavine (PF), and Hoechst 33258 (HO). Due to their spectral properties, HO or EB combined with HEPn were not as suitable for the discrimination of MN from debris as was HEPn in combination with PF. With HEPn in combination with PF, however, additional noise was found at low fluorescence intensities, probably due to free fluorescent dye molecules in the solution. The optimal simultaneous staining of membranes and DNA was obtained using a combination of DPH and EB. The induction of MN in Chinese hamster and mouse NIH-3T3 cells by UV-B illumination was studied with this new staining technique. UV-B illumination (280-360 nm) induced MN in both cell lines. Chinese hamster cells were found to be more sensitive to these wavelengths. Illumination with wavelengths above 360 nm did not induce MN in either cell line. The results obtained from human lymphocytes using the combination of EB and DPH were comparable to the results obtained with the combination of EB and HO.

L2 ANSWER 17 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

ACCESSION NUMBER: 1995:44786 BIOSIS
DOCUMENT NUMBER: PREV199598059086
TITLE: Measurement of micronuclei by flow cytometry.
AUTHOR(S): Nuesse, Michael; Beisker, Wolfgang; Kramer, Johannes; Miller, Beate M.; Schreiber, Georg A.; Viaggi, Silvia; Weller, Eva Maria; **Wessels, Jurina M.**
CORPORATE SOURCE: GSF-Forschungszentrum Umwelt Gesundheit, Inst. Biophysikalische Strahlenforschung, D-85758 Oberschleissheim, Germany
SOURCE: Darzynkiewicz, Z. [Editor]; Robinson, J. P. [Editor]; Crissman, H. A. [Editor]. Methods Cell Biol., (1994) pp. 149-158. Methods in Cell Biology; Flow cytometry, Part B, Second edition. Publisher: Academic Press, Inc., 1250 Sixth Ave., San Diego, California 92101, USA; Academic Press Ltd., 14 Belgrave Square, 24-28 Oval Road, London NW1 70X, England, UK. Series: Methods in Cell Biology. CODEN: MCBLAG. ISSN: 0091-679X. ISBN: 0-12-564143-5 (cloth), 0-12-203052-4 (paper).
DOCUMENT TYPE: Book
Book; (Book Chapter)
LANGUAGE: English
ENTRY DATE: Entered STN: 31 Jan 1995
Last Updated on STN: 31 Jan 1995

L2 ANSWER 18 OF 24 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN DUPLICATE 5

ACCESSION NUMBER: 1994:438949 BIOSIS
DOCUMENT NUMBER: PREV199497451949
TITLE: Photodynamic Antitumor Agents: beta-Methoxyethyl Groups Give Access to Functionalized Porphycenes and Enhance Cellular Uptake and Activity.
AUTHOR(S): Richert, Clemens [Reprint author]; **Wessels, Jurina M.**; Mueller, Martin; Kisters, Michael; Benninghaus, Thomas; Goetz, Alwin E.
CORPORATE SOURCE: Lab. Organic Chem., E.T.H, Universitaetstrasse 16, 8092 Zurich, Switzerland
SOURCE: Journal of Medicinal Chemistry, (1994) Vol. 37, No. 17, pp. 2797-2807. CODEN: JMCMAR. ISSN: 0022-2623.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 11 Oct 1994
Last Updated on STN: 10 Nov 1994

AB Porphycene photosensitizers bearing two or four methoxyethyl side chains

were synthesized in nine steps from commercially available starting materials. Ether cleavage led to (hydroxyethyl)- and (bromoethyl)porphycenes that were converted to vinyl and benzo derivatives. Five of the side chain-functionalized porphycenes were biologically studied in comparison with two tetra-n-propylporphycenes. Porphycenes were incorporated in small unilamellar liposomes and incubated with cultivated SSK2 murine fibrosarcoma cells. Cellular uptake and phototoxicity 24 h after 5 J/cm² laser light treatment were determined. The porphycenes tested were between 17 and 220 times more photodynamically active than the currently clinically used sensitizer Photofrin, although extinction coefficients of the porphycenes' irradiated bands are only approximately 10-fold higher. The LD-50 concentration for SSK2 cells in the incubation medium was as low as (8.5 \pm 2.8) times 10⁻⁹ M for tetrakis(methoxyethyl)porphycene. Two methoxy or hydroxy groups enhanced cellular uptake, three or four methoxy groups both enhanced and accelerated cellular uptake of tetraalkylporphycenes. Half-life times of the uptake processes varied between (0.14 \pm 0.04) and (14 \pm 4) h and cellular saturation levels between (1.2 \pm 0.2) and (26 \pm 3) pmol/10⁵ cells. When individual uptake rates were accounted for, all porphycenes had a similar "cellular" phototoxicity, pointing toward a common mechanism of action. Evidence is presented for the assumption that cell membranes are the primary targets of the tested porphycenes and that membrane solubility may play a critical role in their photodynamic efficiency. The results show that nonionic polar side chain functionalities can strongly enhance cellular uptake and antitumor activity of lipophilic porphyrinoids and thus that the known lipophilicity/activity relationship can be reversed for very hydrophobic sensitizers.

L2 ANSWER 19 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1994:453208 CAPLUS

DOCUMENT NUMBER: 121:53208

TITLE: Kinetic- and localization-properties of protoporphyrin dimethyl ester in fibrosarcoma cells

AUTHOR(S): Wessels, Jurina M.; Beisker, W.; Seidlitz, Harald K.

CORPORATE SOURCE: GSF-Forschungszentrum fur Umwelt und Gesund., Inst. f. Biophys. Strahlenforsch., Oberschleissheim, D-85764, Germany

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1994), 2078(PHOTODYNAMIC THERAPY OF CANCER), 363-70
CODEN: PSISDG; ISSN: 0277-786X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Protoporphyrin-dimethyl ester (PP) is an amphiphilic porphyrin which shows a fast clearance and is therefore of interest for photodynamic therapy. Localization of the sensitizer is one point of interest, since it has a strong influence on the phototoxic effect. Localization of PP in fibrosarcoma cells was probed by time resolved and steady state spectroscopy. Dioleoyl L- α -phosphatidylcholine (DOPC) liposomes were used as a carrier system for the amphiphilic sensitizer with a molar ratio of PP/DMSO = 1/200. Since intermembrane exchange is responsible for the uptake of PP the authors expected a membrane bound localization. Therefore, the characterization of the microenvironment was based on comparison of the spectroscopic properties of PP in organic solvents, artificial membranes and in cells. Cells were incubated with a concentration

of

3.5 \times 10⁻⁷M in FCS free medium at T = 37°C for 4h. Aprotic solvents show a bathochromic shift of the Soret-band with increasing dielec. constant ϵ whereas the Q-bands exhibit no spectral shift within the instrumental resolution ($\Delta\lambda$ = 3 nm). Addnl., the fluorescence decay time of the monomer (τ = 11.5 ns) remains constant. However, in aprotic solvents like dimethylsulfoxide, 1-propanol or

ethylenglycol which exhibit an amphiphilic character the authors observed no spectral shift of the Soret-band with increasing ϵ but an increase in the fluorescence decay time ($\tau = 16.8$ ns). This decay time of PP is within the error margin in agreement with its monomer decay time in artificial membranes ($\tau = 16.8$ ns) and in single cells ($\tau = 15.3$ ns). Based on this comparison the authors suggest that PP is bound within the amphiphilic part of the membranes, i.e., between the polar headgroups and the fatty acyl chains of the cytoplasm membrane.

L2 ANSWER 20 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:391524 CAPLUS

DOCUMENT NUMBER: 122:155426

TITLE: Measurement of micronuclei by flow cytometry

AUTHOR(S): Nuesse, Michael; Beisker, Wolfgang; Kramer, Johannes; Miller, Beate M.; Schreiber, George A.; Viaggi, Silvia; Weller, Eva Maria; **Wessels, Jurina M.**

CORPORATE SOURCE: GSF-Forschungszentrum fur Umwelt und Gesundheit, Institut fur Biophysikalische Strahlenforschung, Oberschleissheim, D-85758, Germany

SOURCE: Methods in Cell Biology (1994), 42(Flow Cytometry (2nd Ed.), Pt. B), 149-58

CODEN: MCBLAG; ISSN: 0091-679X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Simultaneous flow cytometry measurements of DNA content of micronuclei and nuclei by using the log mode, light scatter signals, cell preparation and staining, etc., are discussed.

L2 ANSWER 21 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:453582 CAPLUS

DOCUMENT NUMBER: 122:285637

TITLE: Fluorescence-spectroscopic studies on the uptake kinetics and localization of photosensitizers in vitro

AUTHOR(S): **Wessels, Jurina Margarete**

CORPORATE SOURCE: GSF-Forschungszentrum Umwelt und Gesundheit, GmbH, Neuherberg, D-8042, Germany

SOURCE: GSF-Ber. (1993), 5/93, 99 pp.

CODEN: GSFBEH; ISSN: 0721-1694

DOCUMENT TYPE: Report

LANGUAGE: German

AB This thesis work reports on the causal relationships between the solubility, uptake mechanisms, and localization of photosensitizers (mainly porphyrins and porphycenes) as determined by the spectroscopic properties of the sensitizers in various microenvironments. Fibrosarcoma cells were used as a model system. These cells were shown to be a suitable system for studying the above properties in vitro, which could significantly reduce the number of animal-exptl. studies.

L2 ANSWER 22 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1992:566721 CAPLUS

DOCUMENT NUMBER: 117:166721

TITLE: Intracellular fluorescence polarization, picosecond kinetics, and light-induced reactions of photosensitizing porphyrins

AUTHOR(S): Seidlitz, Harald K.; Stettmaier, Kurt; **Wessels, Jurina M.**; Schneckenburger, Herbert

CORPORATE SOURCE: GSF Forschungszentr. Umwelt Gesundheit GmbH, Neuherberg, D-8042, Germany

SOURCE: Optical Engineering (Bellingham, WA, United States) (1992), 31(7), 1482-6

CODEN: OPEGAR; ISSN: 0091-3286

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Porphyrin monomers, dimers, and aggregates with various tumor-localizing and photosensitizing properties can be differentiated based on their fluorescence lifetimes. These individual components are shown to possess different degrees of polarization. This fact can be used both for their microscopic imaging and for investigation of the microenvironment of porphyrins within cells and tissues. The spectral bands around 635 and 675 nm were correlated with the emission of porphyrin monomers and aggregates, resp. The formation of photoporphyrin was not significant during the light-induced porphyrin reaction.

L2 ANSWER 23 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1992:465718 CAPLUS

DOCUMENT NUMBER: 117:65718

TITLE: Microscopic fluorescence spectroscopy and diagnosis

AUTHOR(S): Schneckeburger, Herbert; Strauss, Wolfgang; Rueck, Angelika; Seidlitz, Harald K.; Wessels, Jurina M.

CORPORATE SOURCE: Inst. Lasertechnologie-Med., Univ. Ulm, Ulm, D-7900, Germany

SOURCE: Optical Engineering (Bellingham, WA, United States) (1992), 31(5), 995-9

CODEN: OPEGAR; ISSN: 0091-3286

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

AB A review with 23 refs. Present techniques and new perspectives of microscopic fluorescence spectroscopy in cellular diagnosis are outlined. Recent applications include the detection of mitochondrial respiratory deficiencies and the intracellular location and light-induced reactions of photosensitizing porphyrins.

L2 ANSWER 24 OF 24 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1992:190247 CAPLUS

DOCUMENT NUMBER: 116:190247

TITLE: Intracellular localization of meso-tetraphenylporphine tetrasulfonate probed by time-resolved and microscopic fluorescence spectroscopy

AUTHOR(S): Wessels, Jurina M.; Strauss, Wolfgang; Seidlitz, Harald K.; Rueck, Angelika

CORPORATE SOURCE: GSF-Forschungszentrum Umwelt Gesund. G.m.b.H., Neuherberg, W-8042, Germany

SOURCE: Journal of Photochemistry and Photobiology, B: Biology (1992), 12(3), 275-84

CODEN: JPPBEG; ISSN: 1011-1344

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The effects of solvent pH on spectral properties and fluorescence decay kinetics were investigated to characterize the microenvironment of meso-tetraphenylporphine tetrasulfonate (TPPS4) taken up by rat epithelial cells. Steady-state absorption and fluorescence spectra of TPPS4 in buffer solutions of different pH were used to identify a ring protonated species at pH ≤ 4 . This dication could also be distinguished from the unprotonated form by its altered fluorescence decay time (3.5 vs. 11.4 ns). In addition, time-resolved spectroscopy gave some evidence of a monocationic species existing at pH 6-9. This was concluded from the occurrence of another component with a decay time of 5 ns. Measurements of the spectral and kinetic properties of the fluorescence emission of single epithelial cells (RR1022) incubated with TPPS4 indicated that the sensitizer was mainly localized in a microenvironment with a pH of 5, a value which occurs intracellularly only within lysosomes. Cells kept in the dark exhibited the characteristic spectra of both the dication and the neutral form. The fluorescence decay showed 2 components with decay times of 2.6 ns and 10.6 ns. Irradiation of the cells changed the decay times to 4.6 ns and 13.4 ns and the dication fluorescence emission peak vanished,

which is in accordance with the results obtained from buffer solns. at pH ≥ 6 . Therefore, it is deduced that the photodynamic action leads to a rupture of the lysosomes and that the sensitizer is released into the surrounding cytoplasm.

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| E6 | 3 | FORD WM L/AU |
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| E8 | 8 | FORD WM W/AU |
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L3 22 "FORD WILLIAM T"/AU OR "FORD WILLIAM W"/AU

=> d scan

L3 22 ANSWERS CAPLUS COPYRIGHT 2005 ACS on STN
CC 11 (Biological Chemistry)
TI The Distribution of Poisons in the Amanitas

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):2

L3 22 ANSWERS CAPLUS COPYRIGHT 2005 ACS on STN
CC 11 (Biological Chemistry)
TI Distribution of Hemolysins, Agglutinins and Poisons in Fungi, Especially
the Amanitas, the Entolomas, the Lactarius and the Inocybes
IT Fungi
(agglutinins in)
IT Fungi
(hemolysins in)
IT Agglutinins
Hemolysins
Poison oak
(in fungi)
IT Fungi
(poisons in)

L3 22 ANSWERS CAPLUS COPYRIGHT 2005 ACS on STN
CC 11D (Biological Chemistry: Botany)
TI Plant Poisons and their Antibodies

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):end\
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To display more answers, enter the number of answers you would like to see. To end the display, enter "NONE", "N", "0", or "END".

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):end

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L4 9 "FORD WILLIAM T"/AU

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L6 13 "FORD WILLIAM W"/AU

L7 0 L6 AND L2

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| E2 | 9 | | YASUDA AKINORI/AU |
| E3 | 205 | --> | YASUDA AKIO/AU |
| E4 | 228 | | YASUDA AKIRA/AU |
| E5 | 1 | | YASUDA AKIYASU/AU |
| E6 | 4 | | YASUDA AKIYO/AU |
| E7 | 4 | | YASUDA AKIYOSHI/AU |
| E8 | 7 | | YASUDA AKIYUKI/AU |
| E9 | 13 | | YASUDA ALEXANDRE/AU |
| E10 | 1 | | YASUDA AOHICO/AU |
| E11 | 114 | | YASUDA ARATA/AU |
| E12 | 2 | | YASUDA ARITOSHI/AU |

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| SINCE FILE | TOTAL |
| ENTRY | SESSION |
| 93.24 | 93.45 |

FULL ESTIMATED COST

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| SINCE FILE | TOTAL |
| ENTRY | SESSION |
| -12.41 | -12.41 |

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

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